

VERSION WITH MARKINGS TO SHOW CHANGES MADE

The following is a marked version of the amendments to the specification.

Amend the paragraph at page 6, lines 26-36 of the specification to read as follows:

In the inside-drilling method, the auger rod is rotated and the pile is displaced into the ground. [while the pipe pile is not rotated.] According to the above method, waste soil and sand is raised by the auger rod, and a soft ground around the pile can seldom be tightened [improved]. Therefore, it is difficult to obtain a sufficiently high bearing capacity of the pile. According to this method, it is necessary to excavate the ground in the pipe pile at all times. Therefore, unless a circumferential face fixing solution is used, the circumferential face friction is reduced.

Amend the paragraph at page 7, lines 2-12 of the specification to read as follows:

A first object of the present invention aims at [an open] a closed end screwed steel pile, the forward end of the pile body of which is open, or a closed end screwed steel pile, the entire forward end of the pile body of which is closed by a bottom plate. It is a first object of the present invention to provide a screwed [opening end] steel pile characterized in that: when the ground strength is suddenly increased, [the apparent resistance at the forward end is deceased, so that] the pile can easily penetrate into the ground; and a high intensity of bearing capacity can be finally provided.

Amend the paragraph at page 17, lines 1-3 of the specification to read as follows:

Fig. 13 is a perspective view of a screwed place file having [one] two spiral [wing] wings of the present invention, wherein the view is taken from the lower side.

Amend the paragraph at page 17, lines 13-14 of the specification to read as follows:

Fig. 15 is a plan view of the screwed steel pile shown in Fig. [10] 16.

Amend the paragraph at page 18, line 23 to page 19, line 1 of the specification to read as follows:

In the embodiment shown in Figs. 1(a) and 1(b), one piece of one roll of the spiral wing 2 made of [an abrasion resistance] a steel plate is welded onto the outside 1a at the forward end portion of the pile body 1 composed of a steel pipe. The forward end portion 2a of the wing 2 is arranged at the same level as that of the forward end face 1b of the pile body 1. Vickers Hardness (HV) of mild steel is usually 120 to 150. On the other hand, Vickers Hardness (HV) of abrasion resistance steel is higher than 300 [that is, the Vickers Hardness (HV) of abrasion resistance steel > 300.] because abrasion of the wing is restrained in a deep depth and excavation performance is maintained. Furthermore, the use of this kind of steel is more effective to restrain the increase of the coefficient of friction between the steel wing and the soil and the sand. Therefore, it is effective to use an abrasion resistance steel plate for the wing. In this case, abrasion resistance steel or an abrasion resistance steel plate is defined as steel or a steel plate stipulated by JIS G3115, JIS G3106, JIS G3120, JIS G3128, SPV 450N, SPV 450Q and SM 570Q.

Amend the paragraph at page 28, lines 10-25 of the specification to read as follows:

[Referring to Figs. 18(a) and 18(b),] Construction of the screwed steel pile [described in the fifteenth] according to the present invention will be explained below based on Fig. 13

and Fig. 18. This screwed steel pile is drilled into the ground as follows. While the pile body 1 is being rotated by a motor of a heavy construction machine which is put at the top portion of the pile body 1, the pile body 1 is penetrated into the ground by a pushing device of the pile driver. Since the excavating blade 3 composed of the protruding portion 2a and the extending portion 2d of the wing is protruding downward to a lower portion of the pile body 1, soil and sand at the forward end of the pile is weakened by the excavating blade 3. The thus drilled soil and sand is easily moved to an upper portion of the main body of the wing 2 which continues to the excavating blade 3. Therefore, the force of excavation can be regenerated.

Amend the paragraph at page 28, line 34 to page 29, line 9 of the specification to read as follows:

The screwed steel pile [described in the sixteenth] according to the present invention will be explained below. In this screwed steel pile, as shown in Figs. 13 and 16, the inside 5a of the bottom plate ring 5, which is a doughnut-shaped disk, protrudes to the pile center side compared with the inside 1a of the pile body 1. Therefore, the corner portion 7, which is recessed, is formed by the upper face 5b of the bottom plate ring 5 and the inside 1a of the pile body. Due to the above structure, soil and sand on the lower face 5c side of the bottom plate ring 5 is not excessively compressed and restricted but smoothly pushed into the pile body 1.

Amend the paragraph at page 31, lines 5-7 of the specification to read as follows:

A model of the dynamic state in which forces act on the top portion of the pile and the bottom plate portion is shown in Fig. [11] 19.

Amend the paragraph at page 32, lines 15-17 of the specification to read as follows:

[As disclosed in claim 13 of the present invention,] The forward end bearing capacity Q_u of the pile can be found by the following equation.

Amend the paragraph at page 33, lines 15-17 of the specification to read as follows:

[As disclosed in claim 14 of the present invention,] The pulling capacity Q_{up} of a pile end with respect to pulling is found by the following expression.

Amend the paragraph at page 37, lines 17-19 to read as follows:

(i) While the screwed pile composed of a steel pipe is being rotated and driven, it is penetrated into the ground 100 [4], the depth of which is 8 to 9 m.

Amend the paragraph at page 39, lines 8-14 of the specification to read as follows:

The pipe pile penetration device 51 as shown in Fig. 22 includes: a screwed pile 1; an auger screw 73; and a double doughnut type auger machine 55 (motor) shown in Fig. 22 and Fig. 25 for driving the pile 1 and the auger screw 73 respectively. The auger machine 55 includes: a pile drive section 81 for rotating the pile 1; and an auger drive section 82 for rotating the auger 73 normally and reversely.

REMARKS

Entry of this Preliminary Amendment is respectfully requested.

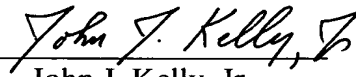
This Preliminary Amendment amends the specification of the above-identified patent application to improve clarity. The amendments of this amendment were entered in parent Application No. 09/423,563.

An action to the merits is respectfully requested.

Respectfully submitted,

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